# AN/ALR-67(V)3

# Advanced Special Receiver (ASR)

# Direct Vendor Delivery Program

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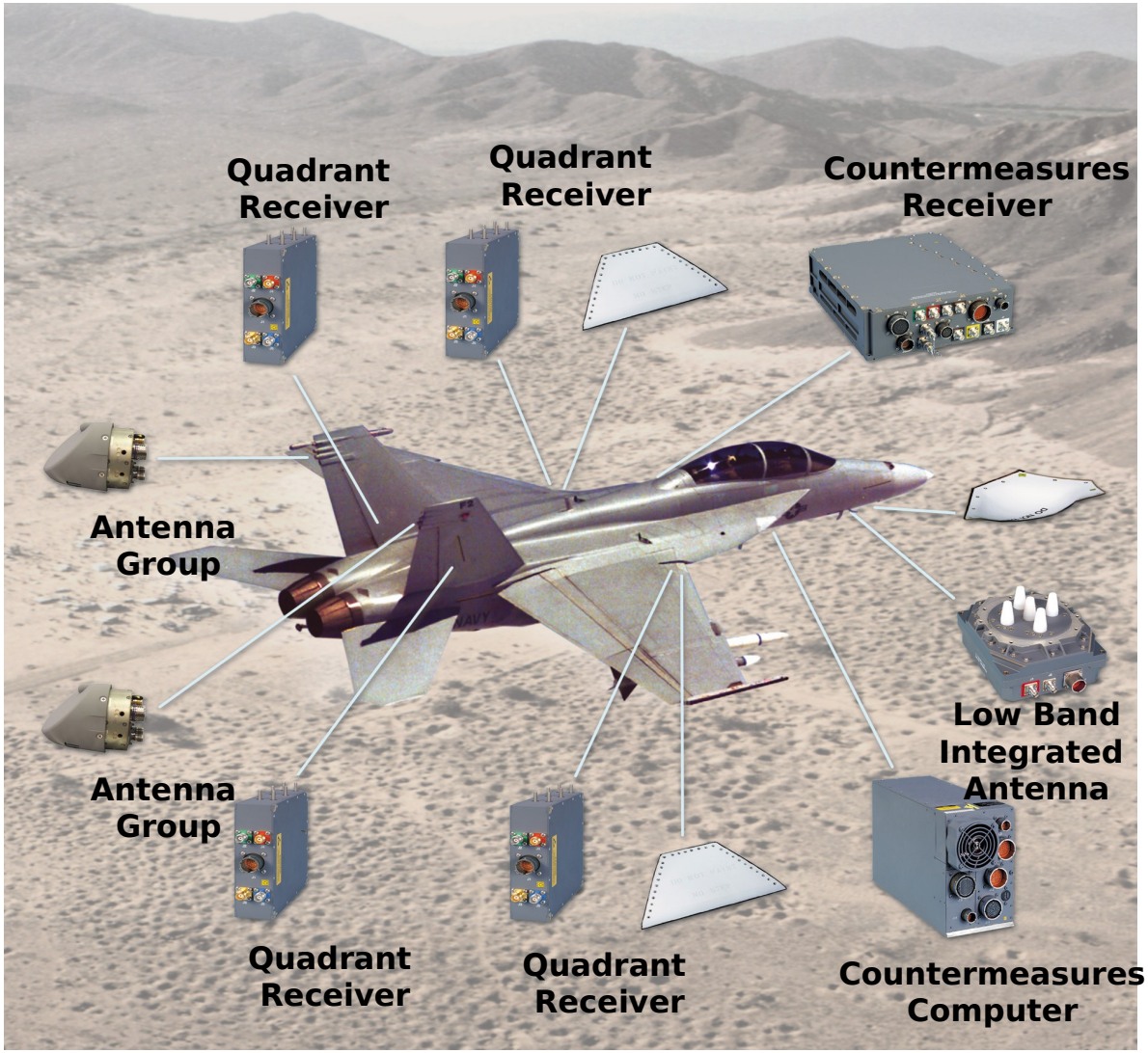
# AN/ALR-67(V)3




- **F/A-18E/F Radar Warning Receiver (RWR)**
- **Customer/User: USN**
- **Status: Currently in Production**
- **PBL Performing Organization:**
  **Raytheon**
  **EW Operations,**
  **Goleta, CA**

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# What is Direct Vendor Delivery (DVD)?



- **F/A-18E/F Performance Based Logistics (PBL) Program**
  - **Navy AN/ALR-67(V)3 Radar Warning Receiver Repair Depot**
  - **Contract Awarded September 1999**
- **Two level maintenance approach**
  - **On Aircraft: Organic “O Level”**
  - **Original Equipment Manufacturer (OEM): Depot “D Level”**
- **As with other systems, on aircraft failures are isolated to the Weapons Replaceable Assembly (WRA) by the ASR system’s Built in Test (BIT) and reported to the mission computer**
- **Suspect WRAs are replaced with a serviceable spare and returned to the OEM, Raytheon, for repair**

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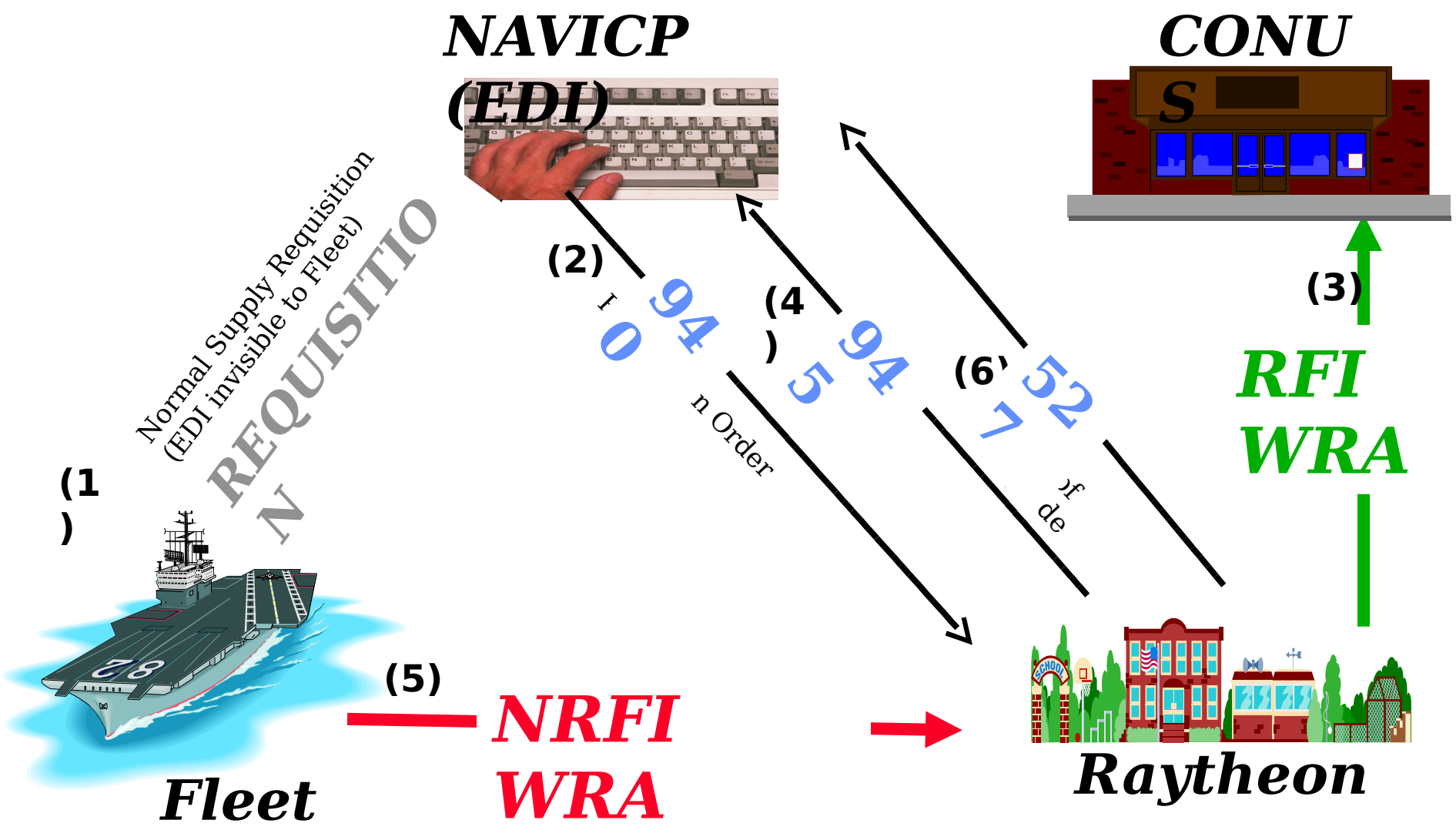
AN/ALR-67(V)3 DVD Program

# The DVD Process

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- **Availability**
  - **Raytheon is required to ship a spare WRA within five working days of receipt of spares request**
- **Reliability**
  - **The Mean Flight Hours Between Failure (MFHBF) shall improve by a prescribed rate over the first five years of deployment**
- **Retrogrades**
  - **The Navy is required to return faulty WRAs to Raytheon within 30 calendar days from issue of a spares request**
- **Penalties**
  - **The penalty for not meeting any metric during a contract year is the provision of additional spares**

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- **Steps taken to assure Raytheon achieves the Availability metric**
  - **Maximize Supply Chain Management efficiency**
  - **Assure availability of spare parts – front end loaded**
  - **Dedicated DVD facility**
    - **Special Test Equipment (STE)**
    - **Staffing**
  - **Personnel with the necessary expertise**

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# Reliability Improvement



- **Raytheon has signed up to continuous improvement of the System Reliability metric over the first five years of deployment**

- **Reliability growth is achieved by several means**
  - **Identify and correct failure trends through FRACAS**
  - **Implement improved designs**
  - **Technology insertion**
  - **Back fit of new designs into earlier configuration hardware**

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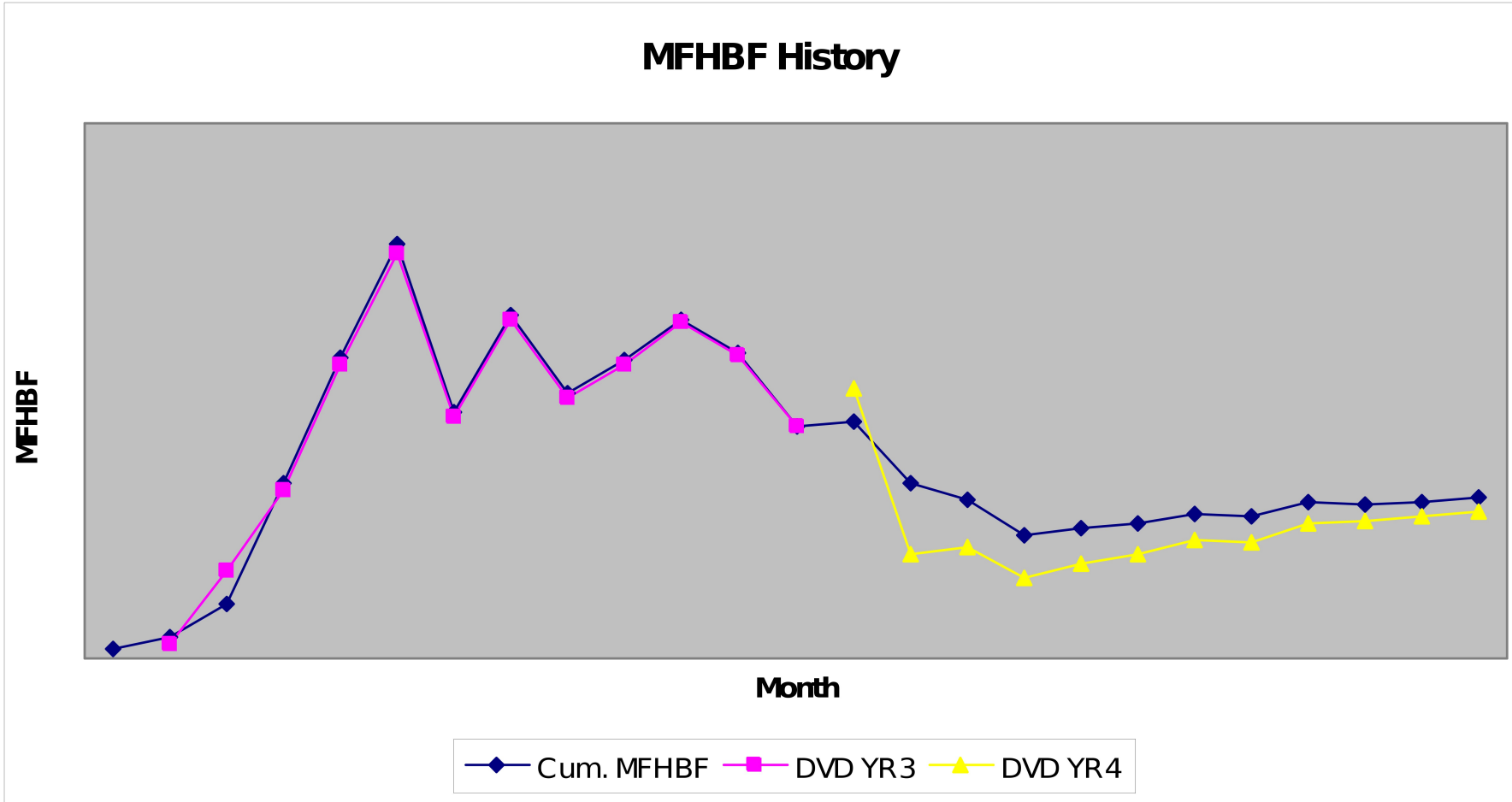


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# Raytheon Responsibilities



- **Ensure a rapid delivery of RFI assets to designated CONUS hub without waiting for a carcass arrival**

- **Maintain facilities to repair AN/ALR-67(V)3 WRAs**
  - **Raytheon**
    - **System level test – Goleta, CA**
    - **Unit level test and rework – Goleta, CA**
    - **Subassembly level test and rework – El Segundo, CA, Forest, MS, Andover, MA, Dallas, TX**
  - **Subcontractors – Owego, NY, Bohemia, NY , Lansdale, PA, San Diego, CA**
    - **Unit level test**
    - **Subassembly level test and rework**

- **Inventory tracking**
  - **RFI Spares**
  - **Hardware in rework**

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- **On aircraft fault isolation and maintenance**
  - **Identify suspect WRA**
  - **Request replacement WRA**
  - **Remove and replace WRA**
  - **Return suspect WRA to Raytheon within 30 calendar days**

- **Additional Raytheon requested activities**
  - **Record BIT data and return with WRA**
  - **Confirm failure on aircraft**
    - **Swap positions/WRA**

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- **Raytheon maintains As Built/As Maintained configuration**
  - **Materials Management Information System (MMIS)**

- **Raytheon has Systems Engineering responsibility**
  - **Configuration control below the WRA level**
  - **Technology insertion**
    - **Reliability improvement**
  - **Parts obsolescence management**
    - **Not contractually required**
    - **Assures future supportability**
    - **Lifetime buy/Redesign**

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# Materials Management Information System (MMIS)

- **MMIS was developed by Raytheon to track all aspects of PBL Programs**
  - **As Built/As Maintained**
  - **Document Management**
  - **Electronic Data Interchange**
  - **FRACAS**
  - **Inventory Management**
  - **MMIS Process**
  - **Parametric Data**
  - **Parts Interchangeability**
  - **Parts Management**
  - **Project Setup**
  - **Reporting System**
  - **Work Flow**

- **Web based application**
  - **Accessible by all Raytheon sites, Customer (Navy) and Subcontractors**
    - **Access available via PDA/Phone**

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- **Failure Reporting, Analysis and Corrective Action System (FRACAS)**
  - **Generate a failure report for all field returns**
  - **Document rework**
  - **Analyze failed assemblies/components**
  - **Trend analysis**
  - **Failure Review Board (FRB)**
  - **Corrective actions**

- **FRACAS data feeds back into field diagnostics**

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- **CALCE Virtual Qualification Software**
  - **Located at the University of Maryland, the CALCE Center (Computer Aided Life Cycle Engineering) has formed a consortium of industry and government members investing in the development of methodologies, models, and design tools that address the design and manufacturing of electronic systems**
  - **Virtual Qualification Software**
    - **Based on a Physics of Failure approach**
    - **Captures hybrid/circuit card design**
    - **Performs simulation in different environments**
  - **Raytheon has used the software to evaluate:**
    - **New technologies**
    - **Redesigns**
    - **Proposed new designs**

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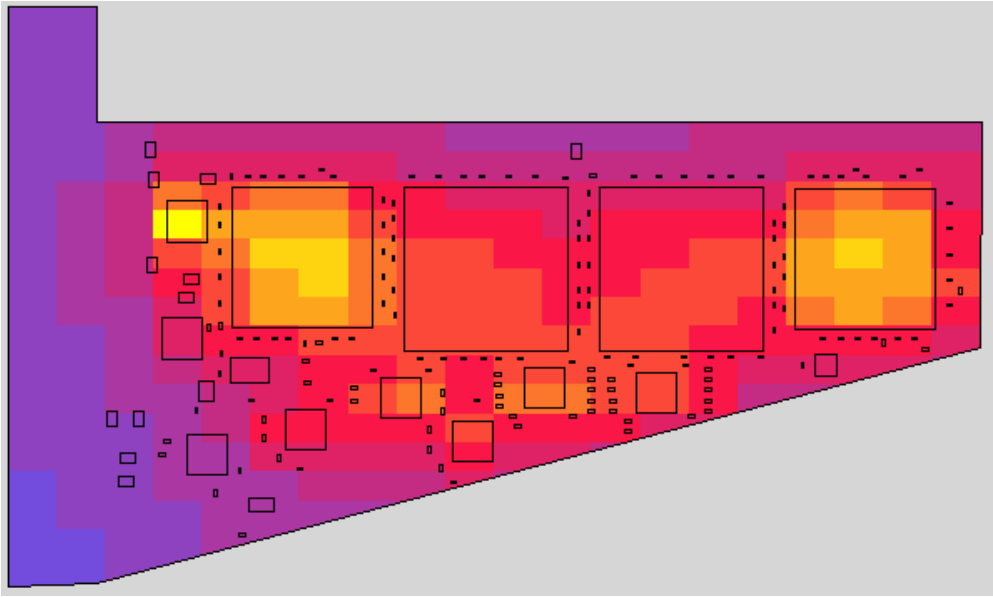
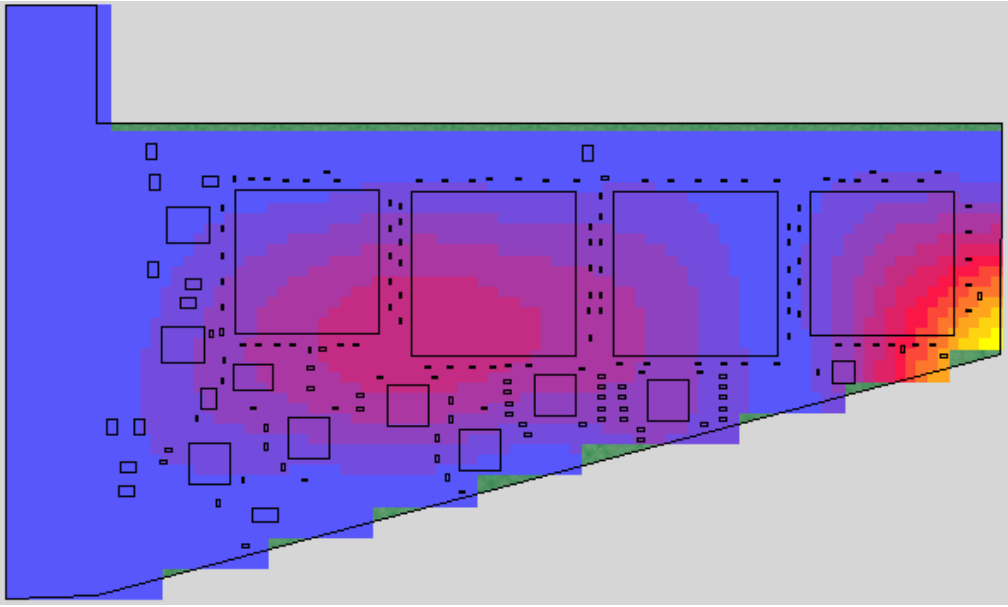
- **CALCE Virtual Qualification software thermal and vibration simulation results for a recent new design**

## Thermal



## Vibration



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- **The ASR Program Office believes that DVD provides substantial benefits to the Navy and to Raytheon**
  - **Reduced infrastructure costs**
  - **High Reliability**
  - **High Availability**

- **Raytheon facilities in Goleta and El Segundo, California, Forest, Mississippi, Dallas, Texas, and Andover, Massachusetts are all committed to the success of the Program**

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